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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHEN, TE Y	

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,498	GUEGUEN ET AL.	
	Examiner	Art Unit	
	Susan Y. Chen	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10 and 12-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10, 12-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

This office action is in response to the amendment filed on 10/24/2005

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 10, 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laumen et al. (U.S. Patent No. 6,396,423) in view of Wang (U.S. Patent No. 6,014,411).

As to claim 10, Laumen et al. (hereinafter referred as Laumen) discloses a digital transmission method of an error correction coding [Abstract; col. 1, lines 21-33], comprising:

a) observing transmission conditions continuously to detect at lest one dynamic parameter of the current transmission conditions [e.g., the use of channel coding method based on Cyclic redundancy check (CRC) or Reed-Soloman techniques during digital data transmission to observing transmission error conditions, col. 1, lines 60 – col. 2, line 44];

b) selecting dynamically, as a function of the at least one dynamic parameter, a distribution of elementary coding step redundancies from a plurality of distributions of elementary coding step redundancies for which a global efficiency is equal to a predetermined target efficiency, for which a global efficiency of a coding scheme resulting from a serial concatenation of an elementary coding step, such that the predetermined target efficiency being determined by a product of efficiencies of at least two elementary coding steps modified by corresponding puncturing steps [e.g., the adjustable turbo coding procedure at col. 2, lines 16 – 37; the functional subsequent coding steps at col. 4, lines 8-40; the correction unit (13, Fig. 2) of the inner (Viterbi) decoder, col. 5, lines 3 – 65; the steps:1015, 1016 of Fig. 3 and associated texts; Note: all of the steps and means are covered by the default Gaussian distribution function of a Turbo coding/decoding].

Laumen did not expressly disclose the details to perform a Viterbi Turbo encoding/decoding processing as claimed.

However, Wang discloses the details as claimed by applicant, comprising:

performing a coding procedure including the at least two elementary coding steps concatenated in series with corresponding puncturing steps, and an interleaving step between said at least two elementary coding steps, each of the at least two elementary coding steps adding at least one redundancy bit to data [e.g., the first and second encoders interleaving and puncturing data flushing processing of Fig. 5, col. 15,

lines 55 – col. 16, line 58] including a sequence of at least one bit by applying the selected distribution of elementary coding step redundancies to generate a coded data including the data and the at least one redundancy bit for a transmission of the coded data over a channel [e.g., the first and second encoders interleaving and puncturing data flushing processing of Fig. 5, col. 15, lines 55 – col. 16, line 58]; and

performing an iterative decoding procedure including at least two elementary decoding steps, de-interleaving and de-puncturing steps, and puncturing and interleaving steps corresponding to the at least two elementary decoding steps to obtain, from the coded data, an estimation of the data [e.g., the first and second decoders de-interleaving and de-puncturing processing of Fig. 7, col. 17, lines 45 – col. 18, line 58].

Laumen and Wang are both in the same endeavor to minimize the errors/noise for digital transmission via turbo encoding and decoding. Therefore, it would have been obvious for an ordinary skilled person in the art at the time the invention was made to be motivated to apply the well known turbo encoding and decoding processing details as taught by Wang in Laumen's system for the purpose to given more clearly description of the intended performance steps associated with the turbo encoding and decoding of his invention.

As to claims 12 and 14, except the limitations recited in claim 10 above, the combined system of Laumen and Wang further discloses that performing a coding

procedure repeatedly modifies the puncturing and interleaving steps and performing a decoding procedure modifies the de-interleaving and de-puncturing steps that corresponding to the at least two elementary decoding steps, as a function of the selected distribution of elementary coding step redundancies [e.g., Laumen: e.g., the adjustment processing performed at col. 4, lines 8-57].

As to claim 13, except the limitations recited in claim 10 above, the combined system of Laumen and Wang further discloses that the performing a coding procedure eliminates one or more elementary coding steps and the corresponding puncturing and interleaving steps and the performing a decoding procedure eliminates one or more said elementary decoding steps, the de-interleaving and de-puncturing steps, and the puncturing and interleaving steps corresponding to the at least two elementary decoding steps, as a function of the selected distribution of elementary coding step redundancies [e.g., Laumen: col. 4, lines 24-57].

As to claims 15 and 16, except the limitations recited in claim 10 above, the combined system of Laumen and Wang further discloses that the elementary coding are performed using convolution and block codes [e.g., Laumen: col. 4, lines 24-28].

As to claim 17, except the limitations recited in claim 10 above, Laumen further discloses the at least one dynamic parameter is a signal/noise ratio [e.g., col., 1, lines 29-31].

As to claims 18-19, except the limitations recited in claim 10 above, Laumen further discloses the observing transmission conditions and selecting a distribution of elementary coding are executed by a transmitter [e.g., the contemporary UMTS system, col. 2, lines 16-18] and a receiver [e.g., the Viterbi decoder, col. 5, lines 15- 65].

Response to Arguments

Applicant's arguments filed 10/24/2005 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, the Office points out that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Furthermore, as cited in the above paragraphs, Laumen specifically discloses the following:

"In mobile communication systems, information to be transmitted is especially protected, using channel coding methods, from transmission over the physical channel, in order to assure the most error-free reception possible." (col. 1, lines 60-64)

"On the receiver side, channel coding methods permit either error correction, error detection, or a combination of the correction and detection of transmission errors." (col. 1, lines 65-67)

"a channel coding method of this type is made up of an inner and outer code. The inner coding is usually accomplished using a convolution code or a turbo code and is usually decoded at the receiver using a Viterbi or a Maximum A Posteriori (MAP) decoder. Typically, decoders are used belonging to both of these types, having the capacity to correct errors although they can neither detect errors nor provide statements concerning the reliability or correctness of the decoded bits. For additional detection of erroneous decisions in the inner decoding device, outer codes on the basis of CRC codes (cyclic redundancy check) or Reed-Solomon codes are used."

"However, in order to support any source data rates, an adjustment of the data rate (rate matching) of the channel-coded information to the discrete channel data rate is carried out after the channel coding. The algorithm provided for this adaptation of the data rates only provides for the puncturing or repeating of selected bits in the data flow. Puncturing and repeating individual bits are the simplest of all mechanisms for error protection. If bits of a data frame of constant duration are punctured, i.e., deleted and not transmitted, then the data rate on the channel falls, whereas, when bits are repeated, additional replications of these individual selected bits are embedded in the data flow, and thus the effective data rate on the channel is increased, as in FIG. 3." (col. 2, lines 25-37)

"As can be seen in FIG. 2, the original block of rate matching is replaced by a very simple correction unit, and the proposed variable block code is used in place of the original outer (usually CRC) code. The CRC codes are only used for detecting erroneous decisions of the inner decoder in order to detect data frames that have been erroneously decoded, and to be able to mark them as such. On the other hand, when variable block codes are used, both their error correction as well as error detection properties can be exploited." (col. 3, lines 47-56)

"The method according to the present invention is depicted in FIG. 2. Source data 10 are first subjected to an outer block coding 11. In contrast to FIG. 1, however, here the level of added redundancy and therefore the size of the emitted data block can be adjusted. At issue is a block coding having

variable redundancy and block size. In this context, the variation of redundancy and thus of block size is selected as a function of the subsequent coding steps, so that the most precise possible adjustment takes place of the data rate to transmission channel 15. In a subsequent function block 12, an inner coding takes place, e.g., using a convolution code or a turbo code. Coders 12 of this type usually have transmission rates of 1/2, 1/3, 1/4, etc., i.e., from one input bit, two output bits, or three or four output bits, are generated. The coded bit rate coming from inner coder 12 is thus always double, triple, or quadruple the data rate made available by block coder 11. By adjusting the data rate of block code 11, it is possible, at a precision of one bit (1/2 convolution coding), two bits (1/3 convolution coding), or three bits (1/4 convolution coding), to adjust the data rate to the data rate of transmission channel 15. Therefore, a fine adjustment 13 is provided which is correspondingly capable of undertaking a fine adjustment in the order of magnitude of one, two, or three bits in accordance with the selected data rate of inner coder 12. Thus, using fine adjustment 13, a bit-precise adjustment of the data rate to the data rate of transmission channel 15 takes place." (col. 4, lines 8-34)

Wherein, as disclosed by Laumen and in light of applicant's specification [e.g., Page 3, lines 5-15] a Viterbi or a (MAP) decoder of a transmission channel clearly applies an inner and outer code mechanism to dynamically observe and detect the current transmission signal parameter errors via CRC codes or Reed-Solomon code and select the transmission signal block size as a function of the subsequent coding steps for adjusting and correcting them based on the variation of redundancy.

In addition, Wang further expressly discloses using a complementary Gaussian distribution function to locate an error floor for a turbo encoding/decoding processing environment in order to optimize a coding gain [Abstract, col. 2, lines 29-41].

Hence, one of ordinary skill in the art at the time the invention was made would in fact, contrary to applicant's arguments, will look to incorporate the complementary Gaussian distribution function as taught by Wang in Laumen's system for conditionally distributing the transfer function processing. Moreover, Rule 37CFR 1.111(b) requires applicant to "distinctly and specifically" points out error" in the examiner's action. Also, arguments or conclusions of Applicant cannot take the place of evidence. *In re Cole, 51 CCPA 919, 326F.2d 769, 140 USPQ 230(1964).*

Therefore, based on the discussion above, the examiner contends that there would be most definitely a reasonable expectation of success.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Y Chen whose telephone number is 571-272-4016. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by tlephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan Y Chen
Examiner
Art Unit 2161

December 13, 2005

UYEN LE
PRIMARY EXAMINER